8.0 TRANSPORTATION

8.1 OVERVIEW

The Vision Statement identifies as a component of Sustainable Growth the need for a "**functional, well integrated transportation system** that provides connections and choices for citizens to move about Greensboro and the Triad, including convenient bus and light rail linkages." The following principles are key to this vision of Greensboro's future transportation system:

- A **balance among different modes of travel**, including interconnected pedestrian, bicycle, and transit facilities and routes in addition to roadways
- **Integrated development patterns and transportation networks** that work together to support objectives such as mixed-use, pedestrian-friendly communities and use of alternative travel modes
- The **equitable distribution of transportation facilities and choices** throughout the community, including attention to areas with less well-developed infrastructure and to connecting workers to employment centers

Typical of cities of similar size throughout the nation, Greensboro's present transportation system is dominated by the automobile. Greensboro residents drive alone at a higher level and use public transportation at a much lower level than the nation as a whole (albeit at a rate higher than the North Carolina average). While the City has a relatively well-developed roadway network with a major beltway (the Urban Loop) under construction, traffic congestion is a quality of life issue for residents. Current development trends indicate increasing automobile dependency in the future. According to what now appear to be conservative projections made by the Greensboro Urban Area Metropolitan Planning Organization in 2001, area population would increase 42%, vehicle miles traveled 80%, and congestion 65% between 1994 and 2025.[1] Unless altered by decisive public action, these development trends will move the City in the direction of an accelerated program of costly

[1] *2025 Greensboro Urban Area Long Range Transportation Plan*, Greensboro Urban Area Metropolitan Planning Organization, August 2001

road widenings that will increase the tax rate, impact properties along existing thoroughfares, and still not keep pace with congestion.

Several agencies are working to address transportation issues in Greensboro and the surrounding area, including the Greensboro Urban Area Metropolitan Planning Organization, the City of Greensboro Department of Transportation (GDOT), Piedmont Authority for Regional Transportation (PART), and the North Carolina Department of Transportation (NCDOT). GDOT is the lead transportation planning agency for the Greensboro Urban Area Metropolitan Planning Organization (MPO), whose member agencies include the City of Greensboro, Guilford County, and NCDOT. As the agency responsible for managing traffic, operations, public parking, public transportation, and transportation planning within the City, GDOT will have the most direct role to play in implementing the transportation policies presented in this element. These policies build upon current transportation initiatives while linking to and supporting other Comprehensive Plan goals and policies for topics such as land use, community character, and economic development.

8.2 GOAL AND POLICIES

GOAL

Develop and maintain a safe, efficient, and environmentally sound transportation system that provides convenient choices for accessing destinations throughout Greensboro and the Triad, including a range of well-integrated transit, pedestrian, and bicycle linkages

POLICIES

8A. Maintain a roadway network that safely and efficiently accommodates vehicular traffic while supporting other community objectives defined in the Comprehensive Plan

8A.1 Continue a thorough, comprehensive maintenance program as a top priority in acquiring and allocating funds, ensuring the preservation of infrastructure investments.

8A.2 Maximize the capacity of existing roadways before increasing capacity via new construction.

8A.3 Invest in road improvements (widenings and new roads) when necessary and appropriate to address safety or capacity deficiencies (both existing and future), primarily by eliminating critical bottlenecks and gaps in the road network.

Narrative:

Policies 8A.1 to 3 are intended to maximize the efficiency and connectivity of the existing road network as opposed to investment in extensive, costly roadway widenings and new construction projects. This philosophy is reflected in the $73.75 million bond package for transportation improvements passed by the citizens of Greensboro in November 2000. To be spent over a ten-year period, the bond package includes $51.5 million for roadway improvements. These improvements emphasize strategic enhancements (targeted widenings, medians, turn lanes, etc.) and extensions of existing streets to address specific deficiencies or needs for connectivity in the road network.

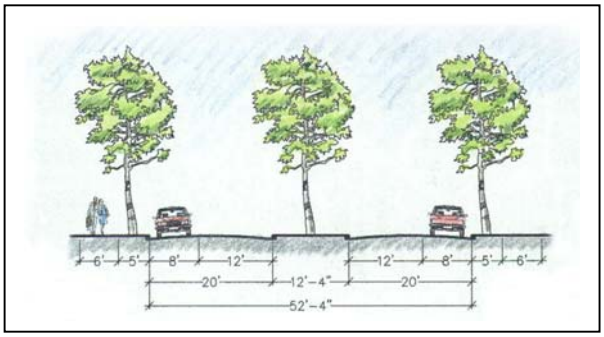
8A.4 Develop a strategic investment plan to create better **road networks in under-served and under-connected areas** of the City, giving priority to connections that will stimulate economic development and which support land use plans and environmental goals.

Narrative:

One of the primary criteria in strategically targeting roadway improvement projects should be to provide better access for areas such as **East Greensboro**, which historically has had a less well developed road network than other parts of the City. An example included in the City's capital program for roadway improvements is the extension of Florida Street. This future roadway will provide better access to the NC A&T farm property, which is identified for development as a research park by Economic Development Policy 7D.3. Another example is the extension of Cone Boulevard to the future Urban Loop at Hines Chapel Road. This roadway will improve access to the northeast Greensboro area and the City should encourage an interchange to be developed where it intersects the Urban Loop.

8A.5 In certain critical corridors or areas, **modify level-of-service expectations** to accept certain levels of congestion where warranted by community needs. This may include constraining ultimate roadway widths and the maximum number of lanes.

8A.6 Consider more **flexible, context-sensitive geometric design standards** for roadway alignments and cross-sections, where appropriate (i.e., where demonstrable benefits are not offset by negative safety or economic impacts). Examples include:



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- Reduced design speeds
- Narrower lane widths
- Provisions for on-street parking
- Planted medians and roadside landscaping
- Tighter curve radii
- Traffic-calming techniques

Narrative:

Policies 8A.5 and 6 address the importance of taking the **local community context** into consideration in the planning and design of roadway improvement projects. Limits on roadway width and number of lanes may be warranted in environmentally sensitive areas, historic districts, established neighborhoods or business districts, pedestrian activity zones, or designated transit corridors. In addition, limits on roadway improvements may be appropriate to discourage development in certain areas that are not targeted for growth by the Comprehensive Plan.

An emerging approach in the transportation field referred to as **context-sensitive design** emphasizes collaborative planning with stakeholders to develop improvements that preserve scenic, historic, and environmental values while maintaining connectivity, safety, and mobility (as opposed to "one-size-fits-all" engineering solutions). This approach lends itself to application in many parts of Greensboro. The planned enhancements to East Market Street, which incorporate medians, turn lanes, and traffic calming measures rather than emphasizing increased capacity for automobiles, are an example. The City's roadway engineering standards should also be reviewed for additional opportunities to develop more flexible applications appropriate to local contexts (see Policy 8F.1).

8A.7 Support the implementation of the adopted **Thoroughfare Plan**.

Narrative:

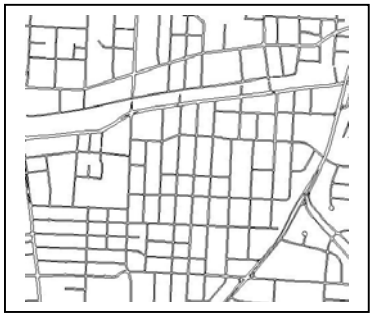
The **Thoroughfare Plan** defines the system of major roadways (freeways, major thoroughfares, and minor thoroughfares) needed to support future land use and population in the City. The last major update to this plan was completed in 1989, with several additional revisions made during the 1990s. The Thoroughfare Plan is currently being updated, with adoption anticipated in early 2003. Figure 8-1 illustrates Greensboro's existing and future thoroughfare network based upon the currently adopted Thoroughfare Plan (existing and proposed freeways and thoroughfares shown on the map) and the update that is in process (conceptual new major and minor thoroughfares). Dates shown for the completion of segments of the Urban Loop are based upon the most current projections by NCDOT. Figure 8-1 also illustrates several potential road improvement projects that are in the

planning stages, including High Point Road, interchanges on US 29 between the Urban Loop and Reedy Fork, and conceptual new thoroughfares west of the Airport.

Once the Thoroughfare Plan is updated and adopted, implementation of the plan will involve identifying and programming key projects for construction in the Metropolitan Transportation Improvement Program and the City Capital Improvements Program.

8A.8 Develop a **Collector Street Plan** to determine effective ways to plan for future collector street connections and **enhanced connectivity** of the local street system.

Narrative:



Intermediate in function between thoroughfares and local streets, **collectors** distribute trips from and channel trips to thoroughfares and provide access and circulation within and between neighborhoods. A well-developed collector street system provides **connectivity** and **choices** for drivers, thus alleviating congestion on larger thoroughfares. The City does not currently have a Collector Street Plan, although some of the larger collectors are shown on the Thoroughfare Plan. Concurrent with updating the Thoroughfare Plan, a plan should be developed to identify Greensboro's network of existing and future collector streets. New collector streets may be "retrofitted" in areas of existing development (e.g., by connecting stub streets between subdivisions) or incorporated into development plans as vacant properties are developed. The need for collector streets may be reduced by the application of interconnected/grid street patterns in new developments in lieu of extensive cul-de-sacs.

8A.9 Consider moving construction of the **northern portion of the Urban Loop** up in priority so as to connect East Greensboro to the Airport area employment center.

A well-connected street system reduces congestion.

Narrative:

The northern portion of the Urban Loop was originally planned to be the last segment to be implemented. However, NCDOT has moved the project up on its priority list and has programmed it for construction. The City should work with NCDOT to ensure that this segment is completed as soon as possible.

8A.10 Stimulate economic growth by pursuing priority funding to **upgrade the US29 interchanges** between the Urban Loop and Reedy Fork.

Narrative:

While this project is not currently funded in the Greensboro Urban Area MPO 2025 Long Range Transportation Plan, it has been identified by the MPO as a priority and a feasibility study has been completed. The MPO should program and identify funding for upgrading the US 29 interchanges in the next update to the Long Range Transportation Plan, in coordination with the update to the City's Thoroughfare Plan.

8A.11 Maintain and expand current **traffic management programs,** to maximize the safety and efficiency of the existing infrastructure. Examples include:

- Up-to-date signal timing plans, vehicle detection hardware, and coordinated signal systems through GDOT's Corridor Optimization Program
- Real-time information on travel conditions, provided to the public via remote video sensing and broadcast on Channel 13 and the Internet
- Comprehensive safety and congestion management programs that collect and evaluate data on an annual basis, and which provide prioritized recommendations

8A.12 Continue promoting and expanding an active **transportation demand management program**, thereby reducing demand for new capacity (helping preserve existing infrastructure) and reducing the rate of growth of area vehicle miles traveled, congestion, and pollutant emissions. This should include consideration of:

- Employee trip reduction targets in congested areas, with appropriate incentives
- Transportation management organizations to promote and coordinate ridesharing, transit use, etc.
- Incentives for increased use of telecommuting and flexible work hours
- Incentives and employer subsidies to encourage employee transit use, including use of the Corporate Connections program
- Public education and awareness programs regarding the availability and benefits of alternatives to automobile commuting

Narrative:

Policies 8A-11 and 12 address the need for a broad-based strategy to limit congestion within the City through strategies to manage traffic flows (traffic management) and to reduce the number of persons driving alone during peak hours (transportation demand management). Current **traffic management** initiatives include roadway corridor optimization and signalization plans, use of the Internet and local cable access to provide information on

traffic conditions, and intersection safety and congestion evaluations. These programs should be continued and expanded.

Current **transportation demand management** initiatives include a van pooling program administered by PART and partially supported by City of Greensboro funds, as well as Corporate Connections, which provides tax credits for employees who utilize transit. The City should work with PART to more aggressively promote transportation demand management at a regional level, including increased use of the existing programs, initiation of new programs, and outreach to corporations and other major employers. The City should also continue and expand internal programs to encourage city employees to use alternatives to single-occupancy vehicles (car-pooling, transit, etc.) in order to further take an active role in promoting transportation demand management in the community.

8A.13 Continue and enhance existing **traffic calming programs** and investigate new ways to manage vehicle speed, volumes, and safety in and around sensitive areas (neighborhoods, schools, parks, etc.).

Narrative:

Roundabout – Hilton Head, SC

Traffic calming refers to physical or operational measures to reduce vehicular speeds or volumes of traffic, especially on local streets and with respect to trips with origins and destinations outside the neighborhood. In general, it is the design of the roadway itself, not the posted travel speed or the presence or absence of police patrols, that determines the driving speed thereon. A variety of traffic calming techniques have been used in Greensboro, most notably the three way stop and neighborhood speed watch programs. Examples of other traffic calming techniques include traffic circles or roundabouts, textured pavements, raised crosswalks, on-street parking, and mid-block street narrowings or "chokers" (often in conjunction with pedestrian crossings). The use of traffic calming in the City should be expanded and applied in a more comprehensive manner on existing streets, street extensions, and new streets. Small area and neighborhood plans can be used to identify specific opportunities for applying this approach.

8B. Develop comprehensive pedestrian and bicycle facility networks

8B.1 Ensure adequate funding for construction and maintenance of **bicycle facilities, sidewalks, and trails** as critical components of the transportation

system. Leverage state and federal grant funds to supplement city resources wherever possible. Ensure close coordination between Transportation and Parks and Recreation plans.

8B.2 Support and apply policies to promote walkability and bicycling including the prioritization of city-funded **pedestrian and bicycle improvements and modifications of development standards**.

8B.3 Continue coordination of pedestrian and bicycle improvements with **roadway and transit plans and projects**.

Narrative:

A multi-faceted strategy should be used to develop a **comprehensive network** of pedestrian and bicycle facilities, including:

- Sidewalks and bike facility enhancements along streets and roadways
- Off-street bicycle/pedestrian paths developed as part of an expanded greenways network (see Community Character Policies 5A.1 to 4).

Current city efforts are focused on sidewalk construction, planning and development of off-street trails, and designation of bike routes along lower volume roadways. These programs should be continued and expanded and additional attention given to establishing bike facility enhancements and intersection crossing treatments along higher volume roadways.

Accommodating pedestrian and bicycle movement in **transportation improvement projects** through the incorporation of features such as sidewalks and bike lanes is key to developing a comprehensive network. Opportunities for bicycle and pedestrian treatments should be evaluated early in the planning and design of all roadway, transit, and rail projects. In addition, the potential for new transportation facilities to disrupt existing or future pedestrian/bicycle routes should be carefully considered and necessary steps taken to mitigate such impacts.

Bicycle and pedestrian levels of service or performance standards are emerging concepts that are based on known

safety and comfort thresholds of pedestrians and bicyclists.[2] Commonly applied to vehicular traffic, level of service criteria should be considered for bicycle and pedestrian as well to help ensure that public facility improvements are designed to provide adequate capacity, user comfort, and safety characteristics.

Private **development standards** should also be reviewed for opportunities to promote installation of pedestrian and bicycle facilities in appropriate locations.

8B.4 Develop a **map of "missing links"** in the trails system, and **require dedication at the time of development**. [see also Community Character Policy 5.A.4]

Narrative:

The City's **Drainageway and Open Space Map** provides the framework for development of an interconnected system of off-street trails, structured around stream corridors. This map can be used to identify critical gaps in the system needed to connect existing trails and trails programmed for construction. In addition to trails along streams, upland connections should be identified in critical locations between adjacent watersheds. The system should extend into Guilford County, where the greatest opportunities for development of new trails exist, as part of a regional network. As described in Community Character Policy 5A.4, one means of implementing the system is to revise the Development Ordinance to require dedication of identified "missing trail links" at the time of development.

8C. Improve local transit service

8C.1 Support **long-range transit planning**.

Narrative:

The Greensboro Transit Authority (GTA), a division of GDOT, provides **local transit service** within the City of Greensboro. **Regional express bus service** connecting Greensboro, Winston-Salem, and High Point via a transfer center near the Piedmont Triad

[2] Two examples are the City of Fort Collins, CO and the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC), the MPO for the Buffalo-Niagara region in New York. Fort Collins developed five performance measures for pedestrian traffic as part of a city-wide Pedestrian Plan. The GBNRTC developed a formula for determining the bicycle level of service of roadways based upon six parameters.

International Airport is operated by PART. PART has sponsored two current studies to evaluate potential **future regional transit service**: a commuter rail study for the Triad Region (referred to as the Mobility Major Investment Study, or MIS) and an Intercity Rail Study for potential service from Asheville to Raleigh via Greensboro. Figure 8-2 illustrates existing and potential future components of Greensboro's transit system, including:

- Existing local and regional express bus routes
- The Depot, an intermodal transportation center under development in the Downtown
- Potential future bus rapid transit lines and routes
- Potential future commuter rail lines and train stations

With respect to local transit service, GTA ridership has increased over the last five years. This trend has accelerated with service enhancements initiated in 2001, such as revised routes, connector shuttles, enhanced evening, and Sunday service. Planning for Greensboro's transit system should incorporate a long-range perspective, with the objective of developing coordinated local and regional systems that are integrated with land use patterns in a manner that promotes significantly greater transit usage. GTA has initiated a **Long Range Public Transportation Plan** that is expected to be complete in 2004. This plan will address long-range issues and needs for local transit, such as future service and routing needs and coordination with future regional transit service. Policies 8C.2 to 5 further elaborate on strategies needed to improve local transit service.

8C.2 **Enhance the existing bus system** through innovative alternatives to traditional fixed-route service and a focus on increasing passenger service and amenities.

8C.3 **Promote transit use** by encouraging or requiring transit-supportive design features in development plans. Emphasize the need for transit-supportive (higher-density, mixed-use) development at major activity centers.

8C.4 Investigate the feasibility of establishing **secondary transit centers** supported by pedestrian/bicycle connections and appropriate land uses (e.g., NCA&TSU, UNCG, Cone Memorial Hospital, etc.).

8C.5 Establish a **dedicated funding source** for transit, in addition to using the maximum tax levy allowance.

Narrative:

Policies 8C.2 to 5 address the **local transit system** operated by GTA. This system includes fixed routes radiating outward from the downtown, an Airport shuttle, and limited flex route service. A downtown multi-modal transportation center is scheduled to open in 2003 and will provide a significant enhancement to existing services. Planning for local transit service should continue to explore and implement where practical a variety of **additional enhancements**, including:

- Demand-responsive services
- Use of smaller vehicles where ridership will not support large buses on fixed routes
- Service to connect neighborhoods and employment centers around the periphery of the City
- Improved service and amenities (service dependability, clean fuel buses, passenger waiting areas, etc.) to make transit a more attractive option
- Systematic efforts to improve the accessibility of the fixed route bus system for persons with disabilities

Integrated transit service and land use patterns are necessary to ensure the long-term viability of local transit. Thus **land use planning** should support future transit service by promoting:

- Mixed-use, higher density activity centers that can function as nodes for transit service, including possible secondary transit centers to complement the downtown multi-modal transportation center
- Incorporation of transit features into significant private and public development projects. Examples include provisions for bus stops such as pull-offs, passenger shelters, convenient walkway access to buildings, and pedestrian-friendly design techniques, such as siting parking behind buildings.

Increased, sustainable funding is another key to enhancing local transit service. One key source is local funding. Locally derived funding for transit funds comes from a variety of sources, including a special transit tax. Although this tax is authorized at up to $.035 per $100 property valuation, the City is currently levying only $.015 per $100 property valuation.

Another key source is state and federal funding. The City and the MPO should actively support state and federal initiatives to increase funding opportunities for alternative modes of transportation.

8D. Support development of a regional transit system in coordination with the Piedmont Authority for Regional Transportation

8D.1 Prepare for **future regional transit service**, e.g.:

- Preserve/develop major corridors consistent with the regional system
- Encourage development compatible with regional transit service (higher-density, mixed-use, pedestrian-friendly) at suitable nodes or activity centers
- Investigate and support transit technologies (bus rapid transit, regional rail, express bus, light rail, etc.) appropriate for specific markets and corridors
- Coordinate roadway improvement projects to support, rather than complicate or compete with, regional transit service

8D.2 Develop **coordinated park-and-ride and feeder/express bus services** to support the future regional system

Narrative:

As noted in Policy 8C.1, PART has sponsored two current studies to evaluate potential **future commuter rail and inter-city rail service**. The Mobility MIS addresses alternatives for commuter rail or bus rapid transit service in the Triad region, while the Intercity Rail Study evaluates alternative corridors within the Triad for potential rail service from Ashville to Raleigh via Greensboro. (The State of North Carolina would implement this service.) The City should participate in evaluating the alternatives and selecting preferred corridors and technologies. Land use and transportation planning efforts should support the designated corridors, including measures to:

- Preserve future rights-of-way from encroachments
- Encourage transit-oriented development at proposed station locations
- Coordinate with other transportation facilities and services, such as roadways, local transit service, pedestrian/bicycle facilities, and park-and-ride lots

8E. Develop a comprehensive parking strategy

8E.1 Conduct a full review of current parking standards. Consider eliminating minimum parking requirements in some cases, or establish **maximum parking standards** in addition to current minimum requirements

8E.2 Ensure that **parking standards** are not an impediment to **infill development**

8E.3 Facilitate **shared parking** where appropriate

Narrative:

The **parking standards** contained in the City's development regulations influence land use patterns and the transportation choices made by Greensboro residents. For example, generous parking standards for suburban commercial development reinforce automobile usage, increase impervious surface areas, and result in lower land-use densities. The same standards applied in urban contexts, on the other hand, can discourage desired infill/redevelopment or disrupt established, pedestrian-oriented development patterns. While parking standards typically specify minimum requirements with no limit on the number of spaces that can be built above the minimum, there is a growing movement towards applying maximum standards as well for certain uses to address the impacts of large, under-utilized parking lots. The City should undertake a comprehensive review of the current parking standards to ensure that they are consistent with currently accepted practice and specify the minimum amounts necessary to support different land uses. **Shared parking arrangements** (e.g., parking lots serving office uses during the day and theater/restaurant uses during the night) should be encouraged to minimize the amount of land required for parking. Enactment of maximum standards, elimination of minimum standards, and other innovative arrangements should be considered in certain situations. For example, reduction or elimination of on-site parking requirements combined with provision of shared, off-site, or on-street parking can be used to promote infill development and alternative travel modes in urban settings where limited land is available for parking.

8E.4 Continue to implement improvements to **downtown parking**, including:

- Parking supply and location
- Long-term and short-term parking
- On-street and off-street parking
- Rates and fines
- Free parking after hours

Narrative:
GDOT's Business/Parking Division manages the supply of on-street and off-street parking in downtown Greensboro. This Division has recently developed a **Comprehensive Parking Study** in conjunction with the downtown businesses. Implementation of the study is underway and will continue for the next several years.

8F. Modify development standards to support transportation objectives

8F.1 Modify **development standards for new developments and infrastructure projects** to support transportation objectives, including:

- Effective spacing and connectivity of collector roads
- Adequate connectivity of the local street system (eliminate cul-de-sacs, except where environmental constraints preclude street connectivity)
- Roadway standards flexible enough to allow context-appropriate designs
- Pedestrian and bicycle facilities that are safe, convenient, and attractive
- Access management standards that preserve corridor capacities

Narrative:
GDOT is developing or plans to develop **enhanced design standards** to address issues such as sidewalks, access management, and street connectivity. This work should continue and be adopted as official policy by the City to ensure that standards for both private and public development projects reflect the policies of the Transportation Element of the Comprehensive Plan. The standards should incorporate flexibility to facilitate desired types of development (e.g., narrower pavement widths to promote infill or other forms of development and to reduce unnecessary developer costs and environmental impacts).